MEDICAL SURGE

Capability Definition

Medical Surge is the capability to rapidly expand the capacity of the existing healthcare system (long-term care facilities, community health agencies, acute care facilities, alternate care facilities and public health departments) in order to provide triage and subsequent medical care. This includes providing definitive care to individuals at the appropriate clinical level of care, within sufficient time to achieve recovery and minimize medical complications. The capability applies to an event resulting in a number or type of patients that overwhelm the day-to-day acute-care medical capacity. Planners must consider that medical resources are normally at or near capacity at any given time. Medical Surge is defined as rapid expansion of the capacity of the existing healthcare system in response to an event that results in increased need of personnel (clinical and non-clinical), support functions (laboratories and radiological), physical space (beds, alternate care facilities) and logistical support (clinical and non-clinical equipment and supplies).

Outcome

Injured or ill from the event are rapidly and appropriately cared for. Continuity of care is maintained for non-incident related illness or injury.

Relationship to National Response Plan Emergency Support Function (ESF)/Annex

This capability supports Emergency Support Function:

(ESF) #8: Public Health and Medical Services.

Preparedness Tasks and Measures/Metrics

Activity: Develop and Maintain Plans, Procedures, Programs and Systems	
Critical Tasks	
Res.C1b 1.5.1	Establish a healthcare system to receive and appropriately treat incident specific casualties or illnesses. This system should be composed of multiple resources from state, sub-state and community resources
Res.C1b 1.9.7.2	Coordinate with WMD/Hazmat to develop plans for managing/decontaminating self-presenting contaminated victims off-site
Res.C1b 1.3.8	Identify local, State, sub-State, and interstate mental health and substance abuse professionals or paraprofessionals by survey
Res.C1b 1.9.1	Integrate local, State, and regional mental health and substance abuse professionals or paraprofessionals in response planning, exercise, and drills
Res.C1b 1.11.5	Ensure emergency system patient transport and tracking systems are interoperable with national and Department of Defense systems
Res.C1b 1.10.3	Ensure that comprehensive stress management strategies and programs are in place and available to all emergency responders, support personnel and healthcare professionals

Activity: Develop and Maintain Plans, Procedures, Programs and Systems	
Res.C1b 1.4.2	Develop medical mutual aid agreements for medical facilities and equipment
Res.C1b 1.14.2	Ensure facility based evacuation plans include identification of receiving facilities and transportation assets. Transportation assets should be coordinated and planned out with response partners
Res.C1b 1.14	Develop healthcare system evacuation plans to include receiving facilities and transportation assets that are coordinated on a regional basis
Res.C1b 1.14.1	Identify adequate evacuation transportation assets and receiving facilities with adequate facilities
Res.C1b 1.15.3	Develop plans to mitigate identified hazards to medical treatment facilities
Res.C1b 1.11.3	Develop electronic medical records for recording treatment provided and patient self-reporting
Res.C1b 1.3.11	Develop plans to identify staff, and equipment and resources to operate alternate care facilities
Res.C1b 1.15.1	Develop plan to restrict access and secure healthcare and surge facilities
Res.C1b 1.5.6	Develop a local regional/State regional pharmaceuticals management system that captures current inventory of MMRS, HRSA-hospital, MMRS, CHEM-PACK caches; ensures a sufficient supply of pharmaceuticals to provide prophylaxis for 3 days first responders and their families, and other key incident response/management personnel, and the general public as determined by local authorities; and tracks the dispensing of pharmaceuticals during the incident

Preparedness Measures	Metrics
The healthcare system is prepared to complete triage, treatment, and initially stabilize 500 cases per million population for patients with symptoms of acute infectious disease – especially smallpox, anthrax, plague, tularemia and influenza	Yes/No
The healthcare system is prepared to complete triage, treatment, and initially stabilize 50 cases per million population for patients with symptoms of acute botulinum intoxication, acute chemical poisoning and nerve agent exposure	Yes/No
The healthcare system is prepared to complete triage treatment and initially stabilize 50 cases per million population for patients suffering burn or trauma	Yes/No
The healthcare system is prepared to complete triage treatment and initially stabilize 50 cases per million population for patients manifesting the symptoms of radiation-induced injury – especially bone marrow suppression	Yes/No
Plan is in place for community based surge hospital bed surge capacity	Yes/No
A 50-bed nursing subunit – per 50,000 population – can be staffed	Yes/No
At least one healthcare facility is identified in each defined sub-state region is able to support initial evaluation and treatment of at least 10 total adult and pediatric patients at a time in negative pressure isolation within 3 hours of the event	Yes/No
All acute care hospitals have capacity to maintain, in negative pressure isolation, at least one suspected case of a highly infectious disease or a febrile patient with a suspect rash or other symptoms of concern who might be developing a highly communicable disease	Yes/No
Sufficient supply of pharmaceuticals are stored at the healthcare facility to provide prophylaxis for 3 days to hospital personnel (medical and ancillary staff) and their family members and hospital based emergency first responders and their families	Yes/No

Activity: Develop and Maintain Plans, Procedures, Programs and Systems	
Sufficient supplies of PPE are available for current and surge health care personnel to work safely within the limits defined by their SOPs	Yes/No
Secure and redundant communications system exists, providing connectivity during a an incident of national significance among health care facilities and all other responder disciplines at all jurisdictional levels	Yes/No
Developed and updated medical surge plans have been developed in conjunction with critical multi-disciplinary partners (public health, EMA, law enforcement, etc.)	Yes/No
Plans exist to operate without public utilities for 72 hours	Yes/No
Plans exist for the set up, staffing and operation of alternate care facilities	Yes/No
A local regional/State regional pharmaceuticals management system exists that: ▪ Captures current inventory of MMRS, HRSA-hospital, MMRS, CHEM-PACK caches ▪ Ensures a sufficient supply of pharmaceuticals to provide prophylaxis for 3 days first responders and their families, and other key incident response/management personnel and the general public as determined by local authorities ▪ Tracks the dispensing of pharmaceuticals during the incident	 Yes/No Yes/No Yes/No

Activity: Develop and Maintain Training and Exercise Programs	
Critical Tasks	
Res.C1b 2.1.6	Train designated hospital personnel in NIMS, NRP and ICS (HEICS)
Res.C1b 2.2.4	Exercise healthcare system, in compliance with appropriate national, state, and local guidance
Res.C1b 2.2.3	Develop and/or implement training, preparedness and exercise programs based on local risk vulnerability assessment and lessons learned
Res.C1b 2.1.7	Train designated hospital personnel in recognition and treatment of CBRNE
Res.C1b 2.2.5	Exercise medical surge plans
Res.C1b 2.1.1	Develop and conduct competency-based education and training programs for adult and pediatric pre-hospital, hospital, and outpatient health care personnel
Res.C1b 2.1.2	Develop program to train medical and non-medical personnel
Res.C1b 2.1.3	Develop program to train health professions students
Res.C1b 2.2.1	Evaluate emergency management plans through training and multiple methods including drills and exercises at tribal, local, State and national levels
Res.C1b 2.2.2	Exercise all plans on an annual basis to demonstrate proficiency in responding to bioterrorism, other infectious disease outbreaks and other public health threats and emergencies
Res.C1b 2.1.5	Develop just-in-time training programs health care workers for unfamiliar critical job functions, and PPE for specific threats

Preparedness Measures	Metric
Hospitals utilize competency-based education and training programs for all hospital personnel responding to a terrorist incident or other public health emergency	Yes/No
Percentage of hospitals that are NIMS/ ICS compliant	100%
Percentage of acute care facilities that participate in exercises consistent with national and JCAHO requirements	75%
Hospitals and their healthcare partners, have an exercise program which conforms with JCAHO, HRSA, CDC, NIMS, and HSEEP requirements	Yes/No

Performance Tasks and Measures/Metrics

Activity: *Direct Medical Surge Tactical Operations*

Definition: In response to notification of mass casualty incident, provide overall management and coordination of medical surge operations.

Critical Tasks	
Res.C1b 3.7.1	Implement incident response communications within the healthcare system
Res.C1b 3.4.1	Execute medical mutual aid agreements
Res.C1b 3.6	Provide coordination and support through the NIMS for providing medical care
Res.C1b 3.6.4.1	Coordinate public health and medical services for those individuals who have been isolated or quarantined
Res.C1b 3.7.2	Provide consistent, accurate and relevant public health and medical information to clinicians, other responders, and the public in a timely manner
Res.C1b 3.7.3	Coordinate with Emergency Public Information to disseminate public health and safety information to the public to improve provision of home healthcare
Res.C1b 3.4.5	Implement emergency credentialing and privileging procedures

Performance Measures	Metric
Policies are implemented for security of healthcare facilities and its perimeter during a mass casualty incident or large scale public health emergency	Yes/No
Percentage of hospitals in the local regional incident impact area that support the incident	90%
Timely public health information is disseminated to improve provision of home healthcare and other personal, family, and employer actions	Yes/No
Activate National Disaster Medical System (NDMS) and other hospital asset reporting and tracking system	Within 1 hour of the incident
Initiate deployment actions for the HHS ICRT	Within 4 hours of the incident
Time to activate the State medical coordinating system	Within 2 hours of notification of the incident

Time to activate Federal ESF 8 assets	Within 6 hours of notification of the incident
Time to initiate deployment actions for NDMS Disaster Medical Assistance Teams (DMAT)	Within 6 hours of incident
Activate and initiate deployment actions for NDMS DMAT equipment caches	Within 24 hours of the incident

Activity: *Activate Medical Surge*

Definition: In response to a mass casualty incident, activate medical surge through implementation of surge plan.

Critical Tasks	
Res.C1b 4.1	Activate healthcare system incident command
Res.C1b 4.4	Consider the implementation of altered standards of care
Res.C1b 4.6	Activate medical surge plans, procedures, and protocols to ensure medical treatment for populations requiring specialized assistance

Performance Measures	Metric
Medical Surge plans are implemented	Yes/No
Personnel are available to augment treatment facilities	Yes/No
Time, in cases of a Catastrophic Incident Supplement (CIS) activation, for VA Primary Receiving Centers (PRCs) within 500 miles of an incident venue to prepare to terminate noncritical medical services and redirect available resources for receipt of patients at VA medical facilities. DOD facilities will respond under NRP. DOD facilities within close proximity will provide support under immediate response authority	Within 24 hours of CIS activation
Time to begin development of a reconstitution plan	Upon identification of Planning Section Chief

Activity: *Implement Surge Patient Transfer Procedures*

Definition: Transition from pre-event bed utilization to access surge capabilities.

Critical Tasks	
Res.C1b 5.2	Activate alternative care sites and overflow emergency medical care facilities to manage hospital surge capacity
Res.C1b 5.3	Provide knowledge or visibility of available destination medical care facilities/services and tracking for mass movement of patients, ensuring patients are matched with transportation and destinations that provide appropriate levels of medical care

Performance Measures	Metric
Systems are in place to identify patients able to be transferred	Yes/No
Time to identify patients to discharge	Within 6 hours of

	notification of requirement to move patients
Resources are available to provide tracking and mass movement of patients	Yes/No
System in place to coordinate patient transfers with local or State EOC	Yes/No
Time to activate traditional and non-traditional emergency transport vehicles	Within 3 hours of notification
Level of coordination with patient tracking system	100%

Activity: *Implement Surge Staffing Procedures*

Definition: Maximize staffing levels in accordance with medical surge plans.

Critical Tasks	
Res.C1b 6.1	Activate healthcare workers' and volunteers' call systems
Res.C1b 6.3.1	Support medical surge capability by using volunteer resources
Res.C1b 6.2.1	Mobilize incident specific medical treatment personnel for pediatrics and adults
Res.C1b 6.2.2	Mobilize non-medical support personnel
Res.C1b 6.3	Assess initial and ongoing need for medical specialists and augment as needed
Res.C1b 6.5	Provide just-in-time training for staff performing non-standard duties
Res.C1b 6.4	Coordinate staff transportation and staging through the state and local EOC
Res.C1b 6.3.2	Coordinate response staffing with MRC, MMRS, Federal and interstate resources, and NGOs and faith based groups

Performance Measures	Metric
Percentage of healthcare organizations that implement call-back procedures	100%
Just-in-time materials and instructions are in place	Yes/No
State participates in Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) Program	Yes/No

Activity: *Receive and Treat Surge Casualties*

Definition: Receive mass casualties and provide appropriate clinical care.

Critical Tasks	
Res.C1b 7.1.2	Provide treatment appropriate to nature of incident and number of injured/ill
Res.C1b 7.3.1	Ensure adequacy of medical equipment and supplies in support of immediate medical response operations and for restocking supplies/equipment requested
Res.C1b 7.3.3	Coordinate and integrate with local, Federal and State ESF 8
Res.C1b 7.2.3	Implement comprehensive stress management strategies and programs for all emergency

	responders and workers
Res.C1b 7.1.3	Provide short-term mental health and substance abuse behavioral health services to the community

Performance Measures	Metric
Systems in place to accrue supplies, pharmaceuticals, and equipment available to support facility surge capacity	Yes/No
Patient decontamination is confirmed prior to facility access	Yes/No
Patients and responders are identified, screened, and monitored after an event	Yes/No
Percentage of patients tracked from arrival at healthcare system though duration of medical care	100%

Activity: *Demobilize Medical Surge*

Definition: Prepare to return healthcare system to normal operations.

Critical Tasks	
Res.C1b 8.1	Transition from surge to normal operations
Res.C1b 8.2	Implement plan for reconstitution of healthcare system capabilities
Res.C1b 8.3	Conduct after-action reviews and prepare report

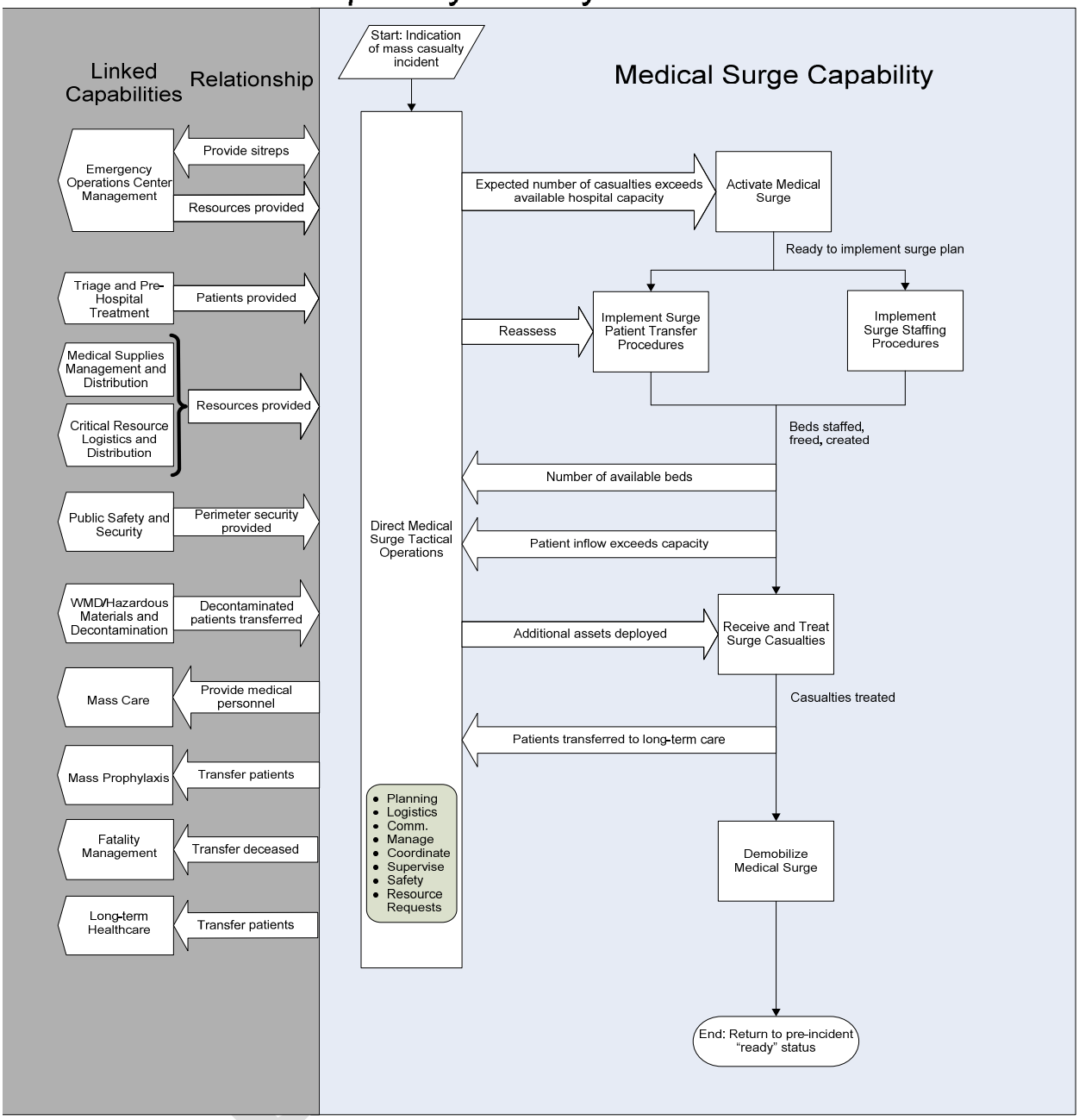
Performance Measures	Metric
Percentage of healthcare system conducting After Action Review	100%

Linked Capabilities

Linked Capability	Relationship
Emergency Operations Center Management	Medical Surge and Emergency Operations Center Management provided one another with situation reports. Emergency Operations Center Management also provides resources to Medical Surge as needed.
Triage and Pre-Hospital Treatment	Medical Surge capability receives patients from Triage and Pre-Hospital Treatment.
Medical Supplies Management and Distribution	Medical Surge capability receives medical resources from Medical Supplies Management and Distribution.
Critical Resource Logistics and Distribution	Medical Surge capability receives resources from Critical Resource Logistics and Distribution.
Fatality Management	Medical Surge capability provides remains to Fatality Management.

Long-term Healthcare	Medical Surge capability transfers patients to Long-term Healthcare. (Will be developed in Phase II)
Mass Prophylaxis	Medical Surge sends patients to Mass Prophylaxis to receive appropriate protection (countermeasures) and treatment.
Public Safety and Security	Medical Surge receives perimeter security from Public Safety and Security.
WMD/Hazardous Materials and Decontamination	Medical Surge receives decontaminated patients from WMD/Hazardous Materials and Decontamination.
Mass Care	Medical Surge provides medical personnel to shelters to conduct treatment of the sheltered.

Capability Activity Process Flow



Capability Element Description Details

Capability Elements	Components and Description
Surge bed capacity for infectious disease treatment	Beds above the daily bed capacity for triage treatment and initial stabilization for patients requiring hospitalization with symptoms of acute infectious disease
Other surge bed capacity	Beds above the daily bed capacity for triage treatment and initial stabilization for patients requiring hospitalization with: (1) symptoms of acute botulinum intoxication or other acute chemical poisoning; (2) suffering from burns or trauma or (3) symptoms of radiation-induced injury—especially bone marrow suppression
Surge Healthcare Staff Unit	For establishing an acute care center, staff include: 1 physician, 1 PA or NP, 6 RNs or a mix of RNs and LPNs, 4 nursing assistants/nursing support technicians, 2 medical clerks (unit secretaries), 1 RT, 1 case manager, 1 social worker, 1 housekeeper, and 1 patient transporter. This is a recommended minimum staffing level. Staffing levels will vary and be incident specific. Staffing and support functions will be more efficient as similar patients are treated at individual facilities. For surge support to existing health care facility, staff include: 1 physician, 1 PA or NP, 6 RNs or a mix of RNs and LPNs, 4 nursing assistants/ nursing support technicians
Isolation capacity (1-person)	The capacity to maintain, in negative-pressure isolation, at least one suspected case of a highly infectious disease or a febrile patient with a suspect rash or other symptoms of concern who might be developing a highly communicable disease.
Isolation capacity (10-person)	The capacity to support the initial evaluation and treatment of at least 10 total adult and pediatric patients at a time in negative-pressure isolation.
Regional pharmaceutical cache system	Develop a local regional/State regional pharmaceuticals management system that captures current inventory of HRSA-hospital, MMRS, CHEM-PACK caches; ensures a sufficient supply of pharmaceuticals to provide prophylaxis for 3 days for first responders, their families, other key incident response/management personnel, and the general public as determined by local authorities; and tracks the dispensing of pharmaceuticals during the incident.
Personal protective equipment (PPE)	Adequate PPE to protect current and additional healthcare personnel. The quantity and type of PPE will be established based on a health vulnerability assessment (HVA) and the level of decontamination that is being designed.
Secure and redundant communications system	Secure and redundant communications system ensures connectivity during an incident of national significance among healthcare facilities, state and local health departments, EMS, emergency management agencies, public safety agencies, neighboring jurisdictions, and Federal ESF#8 elements. .
Data reporting system	

Planning Assumptions

General

- Although applicable to several of the 15 National Planning Scenarios, the capability planning factors were developed from an in-depth analysis of the Pandemic Influenza scenario. Other scenarios were reviewed to identify required adjustments or additions to the planning factors and national targets.

- This capability may require support from multiple ESFs and capabilities.
- HHS Secretary can lift Emergency Medical Treatment and Active Labor Act (EMTALA) requirements for 72 hours.
- Each State should review with HHS other restrictions that may need to be lifted or minimized during the time of an emergency such as Critical Access Hospitals, HIPPA and Medicare and Medicaid rules.
- Triage done in the field will have a significant impact on the subsequent healthcare surge capacity system.
- This Capability applies to a wide range of incidents and emergencies including accidental or deliberate disease outbreaks, natural disasters, nuclear, chemical, and conventional explosive events.
- The professionals listed in the following have basic skill sets commensurate with their professional training and experience qualified by professional licensure and/or industry standards.
- There will be a significant problem locating and providing information on displaced family members as well as victims at treatment facilities.
- Federal, State, and local Emergency Response Plans are activated.
- Non-Federal hospitals of the NDMS, as well as VA Primary Receiving Center (PRCs) and DoD MTFs within the local vicinity of the incident are authorized to provide definitive care to casualties of a catastrophic mass casualty incident.
- Public Health Emergency and Stafford declaration will be utilized to enable the Secretary of the Department of Health and Human Services (HHS) to invoke Emergency Hiring Authority and additional resources for additional healthcare assets.
- Alternative Care Facilities (ACFs) are community based medical facilities such as ambulatory surgical centers, which can be rapidly mobilized for medical surge. ACFs are typically buildings that serve a medically-related purpose when not requisitioned for use in an emergency to house patients.
- Ambulatory Care Centers (ACCs) are buildings of opportunity which can be resourced and staffed to provide medical care. The FMCS can also be incorporated within this structure. These are community facilities that do not necessarily provide a medical function outside of an emergency, but have the space and access needed to house patients (armories, auditoriums, conference centers, firehouses, etc.)
- Response to the overwhelming demand for services will require non-standard (Altered Standards of Care) approaches, including: Discharge of all but critically ill hospital patients. Expansion of hospital "capacity" by using all available space. Less than code compliance beds. Relaxation of practitioner licensure requirements as deemed appropriate, such as ratio of staff to patients. Utilization of general purpose and special needs shelters as temporary health facilities.
- Secondary bacterial infections following any mass casualty event will stress antibiotic supplies.
- There will be critical shortages of health care resources such as staff, hospital beds, mechanical ventilators, morgue capacity, temporary holding sites with refrigeration for storage of bodies and other resources.
- Routine medical admissions for acute medical and trauma needs will continue.
- Alternate healthcare facility plans are implemented.
- Emergency Use Authorities will be sought.
- Victims and responder monitoring and treatment may be required over a long time frame.
- There may be a denigration of healthcare staff numbers for a variety of causes.
- A large number (75 percent plus) of victims could self present without field triage or evaluation.
- The "normal" supply chain will likely be disrupted.
- Hospital logistical stores will be depleted in the early hours of any large scale event.

- Blood supplies will be taxed and significant regional shortages could materialize quickly following a catastrophic incident. Blood manufacturing, infectious disease-testing, and distribution of tested blood will be problematic.
- There will be a significant increase and demand for specialty healthcare personnel and beds (biological contagious, burn, trauma, pediatrics) depending on the specific event.
- A large number of patients may self refer to a healthcare facility requiring decontamination.
- Healthcare providers are subject to the effects of disasters and may need decontamination, prophylaxis, or immunization measures before being able to perform their response roles.
- Patient transportation to and from airheads and medical treatment facilities (MTFs) will be problematic due to excessive congestion on local roads and limited patient movement alternatives (e.g. rotary wing lift).
- Public anxiety related to a catastrophic incident will require effective risk communication and may require mental health and substance abuse services.
- During a catastrophic incident, medical support will be required not only at medical facilities, but in large numbers at casualty evacuation points, evacuee and refugee points, and shelters as well as to support field operations.
- The DHS National Disaster Medical System (NDMS) and HHS U.S. Public Health Service (USPHS) Commissioned Corps assets will be the first Federal health and medical assets to arrive on the scene of a catastrophic event. Although they may not arrive at all.
- Sub-state regions are able to provide and sustain medical surge capacity in a large-scale public health emergency or bioterrorism event. Ideally, each sub-State region will contain one acute care hospital, one EMS agency, and one public health department/district and work with a multitude of various public agencies as well as private and faith based groups, all of which would respond to a wide-scale event.

Scenario-Specific

Pandemic Influenza:

- Pandemic is pervasive and not localized.
- Worst case scenario would produce 733,000 patients hospitalized on any given day.
- Up to 20 percent of those hospitalized (146,600 patients) are critical and will each require a critical care bed, mechanical ventilation; necessitating staff to patient ratios of 1:2 registered nurses (RN) (73,300 RNs), 1:10 physicians (14,660 MDs); 1:5 respiratory therapists (29,320 RTs). Ratios should be consistent with State/sub-State regions
- 80 percent of those hospitalized (586,400 patients) are non-critical and necessitate a general medical bed, patient to staff ratios of 1:40 physician (14,660 MDs) and 1:20 RN (29,320 RNs).
- Vaccine availability will be insufficient and time to produce additional vaccine unacceptably long.
- Antiviral drug production will be surged.
- Strategic National Stockpile (SNS) will be depleted.
- 42 million out patient visits need to be provided with antivirals, antipyretics, analgesics
- 50 million at home on self care are on over-the-counter (OTC) only.
- 1 percent of the hospitalized patient population (7,338) warrant transfer from one healthcare facility to another more than 100 miles.
- 50 percent of the transferring patient population (3,669) will require transfer during one two-month period; the other half (3,669) during a separate two-month period; averaging 61 patients per day, with surging to 200 patients per day for one week.

- 10 percent of transferring patients (total of 733 patients over/during the entire scenario) could travel by commercial means sans medical attendance en route.
- 50 percent are ambulatory (total 3,669) but require medical attendance en route at a rate of 1 nurse per 50 patients.
- 40 percent are restricted to litters (total 2,936) and require medical attendance at a rate of 1 nurse per 20 patients.
- 50 percent of litter patients are critical and require ventilation and 1 nurse per patient (1,468).
- There is a critical need for containment measures to prevent additional disease spread. Specific counter measures such as social distancing, masks, and hand hygiene should be instituted.
- Because of the limited supply and production capacity, there is a need for explicit prioritization of influenza vaccine based on the risk of influenza complications, the likelihood of benefit from vaccination, role as an influenza pandemic responder, and impact of the pandemic on maintenance of critical infrastructure.
- Persons of all ages will likely need 2 doses of vaccine, 3-4 weeks apart in order to be protected.
- Primary prevention including masks, hand hygiene, and social isolation maybe the primary mode of preventing the spread of disease if vaccine and viral agents are not available in adequate quantities.

Chemical:

- Most likely route of introduction of a chemical exposure in a mass casualty event will be inhalation.
- There will be a delay in the identification of the chemical.
- All chemicals are toxic depending on the concentration and time spent in that concentration.
- Medical treatment facilities have inadequate decontamination capabilities.
- Chemical events will result in immediate and potentially life threatening injuries.
- Appropriate response will rely on rapid decontamination and a locally deployable, pharmaceutical cache. (i.e., Chempack or MMRS)
- Many potential victims may present to healthcare facilities requiring decontamination.

Nuclear Detonation:

- Triage will be a major issue for care providers.
- Decontamination and monitoring will be a major issue.
- As a rule of thumb, the sooner the onset of symptoms and the higher the dose received the less likely the victim will survive.
- Generally, invasive (open) procedures should be performed within the first 48 hours in those receiving significant doses of radiation exposure due to follow on progressive immunocompromised state.
- Critical infrastructure and personnel will be damaged and rendered ineffective for a three mile radius.
- Tens of thousands will require decontamination and both short-term and long-term treatment.
- The evacuated population will require shelter and food for an indefinite time.
- Healthcare facilities and emergency workers in the affected area will be overwhelmed.
- There will be a significant psychological impact on survivors creating long term mental health demands.
- The effects of the radiation will be prevalent for years creating long term health issues.
- Healthcare facilities involved in the affected area will have to be replaced and relocated.
- Triage may identify a significant number of patients who have received lethal doses of radiation with zero chance of survivability who will require palliative care only.

- There is a lack of palliative care resources and planning for large numbers of victims.
- Timely and accurate emergency public health information / crisis information news releases are vital for mitigation and prevention of further health issues.

Planning Factors from an In-Depth Analysis of a Scenario with Significant Demand for the Capability (Pandemic Influenza)

Resource Organization	Estimated Capacity	Scenario Requirement Values	Quantity of Resources Needed
Beds			Provide triage treatment and initial stabilization above the current daily staffed bed capacity for the following classes of adult and pediatric patients requiring hospitalization. 500 cases per million population for patients with symptoms of acute infectious disease 50 cases per million population for patients with symptoms of acute botulinum intoxication, acute chemical poisoning, and nerve agent exposure 50 cases per million population for patients suffering from burns or trauma 50 cases per million population for patients manifesting the symptoms of radiation-induced injury—especially bone marrow suppression
Personnel (option 1): the concept of operations for the acute care center	Suggested minimum staffing per 12-hour shift for a 50-bed nursing subunit follows:		1 physician 1 physician assistant (PA) or nurse practitioner (NP) (physician extenders) 6 registered nurses (RNs) or a mix of RNs and licensed practical nurses (LPNs) 4 nursing assistants/nursing support technicians Medical clerks (unit secretaries) 1 Respiratory therapist (RT) 1 Case manager 1 Social worker 1 Housekeepers 1 patient transporter
Pharmaceutical caches			Establish a local regional/State regional pharmaceuticals management system that captures current inventory of MMRS, HRSA-hospital, MMRS, CHEM-PACK caches; ensures a sufficient supply of pharmaceuticals to provide prophylaxis for 3 days first responders and their families, and other key incident response/management personnel, and the general public as determined by local authorities; and tracks the dispensing of pharmaceuticals during the incident.

Resource Organization	Estimated Capacity	Scenario Requirement Values	Quantity of Resources Needed
Personal protective equipment (PPE)			Ensure adequate PPE (to include prophylaxes) to protect current and additional healthcare personnel during an incident. The quantity and type of PPE will be established based on a hazardous vulnerability analysis (HVA) and the level of decontamination that is being designed
Communications and information technology			Establish a secure and redundant communications system that ensures connectivity during an incident of national significance among healthcare facilities, state and local health departments, EMS, emergency management agencies, public safety agencies, neighboring jurisdictions, and Federal ESF-8 elements. Enhance the capability of rural and urban hospitals, clinics, EMS systems, and poison control centers to report syndrome-related and diagnostic data that is suggestive of terrorism or a highly infectious disease to local and State health departments on a 24/7 basis
Training and education			Use competency-based education and training programs for adult and pediatric pre-hospital, hospital, and outpatient healthcare personnel responding to a terrorist incident or public health emergency

National Targets and Assigned Levels

Responsible	Element Resource Unit	Type of Element	Number of Units	Unit Measure (number per x)	Capability Activity supported by Element
Sub-State region, Federal, State, Tribal, City	Beds - Surge capacity for infectious disease treatment	Equipment	500	Per million population	Receive and Surge Treat Casualties
Sub-State region, Federal, State, Tribal, City	Beds - Surge capacity for other treatment	Equipment	500	Per million population	Receive and Surge Treat Casualties
Sub-State region	Surge Healthcare Staff Unit (Option 1 – for establishing acute care center)	Non-NIMS Resource Organization	2	Per 50-bed unit	Receive and Surge Treat Casualties
Sub-State region	Surge Healthcare Staff Unit (Option 2 - for surge support to existing health care facility)	Non-NIMS Resource Organization	1	Per surge bed assuming a 1:4 staff to patient ratio	Implement Surge Staffing Procedures Receive and Surge Treat Casualties

Responsible	Element Resource Unit	Type of Element	Number of Units	Unit Measure (number per x)	Capability Activity supported by Element
Sub-State region	Surge Healthcare Staff Unit (Option 2) - for surge support to existing health care facility	Non-NIMS Resource Organization	1.4	Per surge bed assuming a 1:6 staff to patient ratio	Implement Surge Staffing Procedures Receive and Surge Treat Casualties
Sub-State region	Isolation capacity (1-person)	Equipment	1	Per Healthcare facility	Receive and Surge Treat Casualties
State	Isolation capacity (10-person)	Equipment	1	Per Regional healthcare facility	Receive and Surge Treat Casualties
State	Regional Pharmaceutical cache system	Equipment	1	Per Public health region	Receive and Surge Treat Casualties
State, City, Sub-State region, Tribal	Personal protective equipment (PPE)	Equipment	1	Per Healthcare provider (person)	Receive and Surge Treat Casualties

References

1. Homeland Security Presidential Directive/HSPD–8: National Preparedness. The White House, Office of the Press Secretary. December 2003. http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html
2. National Response Plan. U.S. Department of Homeland Security. December 2004.
3. National Incident Management System. U.S. Department of Homeland Security. March 2004. http://www.dhs.gov/interweb/assetlibrary/NIMS-90-web.pdf.
4. Resource Typing Definitions–I: First 60 Resources. National Mutual Aid and Resource Management Initiative. U.S. Department of Homeland Security, Federal Emergency Management Agency. January 2004. http://www.fema.gov/pdf/preparedness/initial_60_rtd.pdf.
5. Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120. Occupational Safety and Health Administration. November 2002. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765.
6. Medical Personnel Exposed to Patients Contaminated With Hazardous Waste. Standard interpretation. Occupational Safety and Health Administration. March 1992. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=20609.
7. OSHA Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances. Occupational Safety and Health Administration. January 2005. http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html.
8. Altered Standards of Care in Mass Casualty Events. AHRQ Publication No. 05–0043. Agency for Healthcare Research and Quality. April 2005. http://www.ahrq.gov/research/altstand/.
9. DHS, Office for Domestic Preparedness. Metropolitan Medical Response System (MMRS) Program. http://fema.mmrs.gov
10. Model Trauma System Planning and Evaluation, self-assessment tool for States, Department of Health and Human Services, Health Resources and Services Administration, http://www.hrsa.gov/trauma/model.htm , February 2006.